

Storm Water Data Report



Dist-County-Route: 04-SF-101/1

Post Mile Limits:

101: PM 8.8/9.2;

Project Type: Structure Replacement

EA: 04-163741

RU: 04-242

Program Identification: HE-12

Phase: ☐ PID ☐ PA/ED ☒ PS&E

Regional Water Quality Control Board(s): San Francisco Bay - Region 2

Is the project required to consider incorporating Treatment BMPs? ☒ Yes ☐ No

If yes, can Treatment BMPs be incorporated into the project? ☒ Yes ☐ No

If No, a Technical Data Report must be submitted to the RWQCB

at least 60 days prior to PS&E Submittal. List submittal date: _____

Total Disturbed Soil Area: Approximately 10.5 acres

Estimated Construction Start Date: 12/17/2009 **Construction Completion Date:** 02/10/2011

Notification of Construction (NOC) Date to be submitted: 11/17/2009

Notification of ADL reuse (if Yes, provide date) ☐ Yes **Date:** Determination pending ☐ No

Separate Dewatering Permit (if Yes, permit number) ☐ Yes **Permit #:** _____ ☒ No

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Manish Dalia

Manish Dalia, Registered Project Engineer/Landscape Architect

Date

I have reviewed the storm water quality design issues and find this report to be complete, current, and accurate:



Keyhan Moghbel, Project Manager

Date

Robert Braga, Designated Maintenance Representative

Date

David Yam, Designated Landscape Architect Representative

Date

Brian J. Rowley, District/Regional SW Coordinator or Designee

Date



STORMWATER DATA INFORMATION

1. Project Description

Doyle Drive is an approximately 1.5-mile long freeway that forms the southern approach of U.S. Highway 101 to the Golden Gate Bridge. It is a critical link for traveling between the San Francisco Peninsula and the North Bay. It is located from, east to west, at Girard Road (near the Palace of Fine Arts) to the Golden Gate Bridge approach within the Presidio National Park, in the City and County of San Francisco.

Currently, over 91,000 vehicles use Doyle Drive every weekday. The freeway, built in 1936, has reached the end of its useful life, and may not be structurally safe during a future seismic event. Short-term improvements are no longer cost effective and existing structures, such as the Marina Viaduct (Low Viaduct), Presidio Viaduct (High Viaduct) and Ruckman Undercrossing, have structural sufficiency ratings below recommended levels. The proposed improvements would address structural deficiencies and bring Doyle Drive to current design and safety standards.

The proposed replacement scheme, Presidio Parkway (Parkway), will realign the existing footprint of the traveled-way. Included in this proposal are the following general elements:

- Modifications to interchanges at Girard Road and California State Route (SR) 1,
- Two elevated structures: Low Causeway and High Viaduct,
- Two cut-and-cover tunnels: Main Post and Battery Tunnels,
- Multiple at-grade roadway sections,
- Temporally detour to facilitate traffic movement during construction; this is anticipated to be in use for two (2) winter seasons.

In response to this urgency, the Parkway has been approved to receive funding from the Federal Economic Stimulus Package. In order to be eligible for these funds, an accelerated schedule has been developed. This accelerated, phased strategy plans to divide the Parkway into six (6) separate construction contracts. Of these 6 construction contracts, Contracts 3-7 contain roadway design elements including stormwater improvements. Due to this approach, an approximate total cost savings of \$190 million is anticipated; \$100 million of stimulus and \$90 million of savings from project acceleration and design refinements.

This report concerns the second accelerated construction contract (Contract 4), which extends from, east to west, post-mile (PM) 8.8 to PM 9.2 along U.S. Highway 101. Contract 4 comprises of the Southern Battery Tunnel, and at-grade roadway, and a temporary roadway detour. The Parkway has an approximate disturbed soil and net increased impervious areas of 42 acres and 27.3 acres, respectively. Within Contract 4, the impervious areas are approximately 1.6 acres for the new Doyle Drive alignment, 1.8 acres of new Presidio Roadways, and 7.1 acres for the temporary detour.

2. Define Site Data and Storm Water Quality Design Issues (refer to Checklists SW-1, SW-2, and SW-3)

2.1 Receiving Water Bodies

Existing outfalls release stormwater directly into Crissy Marsh and the San Francisco Bay. The project lies within Hydrologic Sub-Area (HSA) 203.40, in the Central Bay Basin hydrologic planning



area. The San Francisco Bay Regional Water Quality Control Board (Region 2) lists the Beneficial Uses of the Central Bay Basin to include industrial service supply, industrial process supply, ocean commercial and sports fishing, shellfish harvesting, estuarine habitat, migration of aquatic organisms, preservation of rare and endangered species, fish spawning, wildlife habitat, navigation, water contact recreation, and non-contact water recreation. Both Crissy Field Beach and the Central San Francisco Bay are on the 303(d) impaired water bodies list.

2.2 Regulatory Framework

To comply with the Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order No. 99-06-DWQ), issued by the State Water Resources Control Board (SWRCB) and enforced by Region 2, the Department is required to consider and incorporate Best Management Practices (BMPs) to minimize, or prevent, any potential increase to existing water quality impacts. Such BMPs include temporary and permanent measures, and shall be implemented using Best Available Technology (BAT) to the Maximum Extent Practicable (MEP). Temporary measures include Construction Site BMPs. Permanent measures include Design Pollution Prevention, Maintenance, and Treatment BMPs.

Total Maximum Daily Load (TMDL) programs completed or underway in the San Francisco Bay include: Mercury, PCBs, Copper, Nickel, and exotic species. These pollutant load allocations are administered and enforced by Region 2. Mercury, PCBs and exotic species are not prevalent in urban stormwater runoff. However, both copper and nickel are elements that occur in highway runoff and therefore should be addressed by stormwater BMPs. Copper sources include vehicle brake pads, air emission, soil erosion, and vehicle fluid leaks. Nickel occurs in fossil fuels and can be deposited on road surfaces directly or through atmospheric deposition.

The San Francisco Public Utilities Commission (SFPUC) and the Port of San Francisco (Port) have established stormwater design guidelines (Guidelines) to fulfill state and federal requirements for runoff control in City areas that have separated, combined, or no storm sewer services. Since runoff from the project will discharge directly into San Francisco Bay, and the project is surrounded by areas that must adhere to the SFPUC's guidelines, the Project should, in addition to meeting other state and national criteria, provide runoff treatment for all project areas to the standards set forth by the Guidelines. The Guidelines provide detailed sizing and selection guidance for water quality devices that meet the National Pollution Discharge Elimination System (NPDES) requirements of MEP.

2.3 Site Conditions and Constraints

In general, the Bay Region climate is Mediterranean in character with warm dry summers and mild wet winters. San Francisco has moderate temperatures that seldom drop to freezing in winter. The rainy season period is from October to April, and the average annual rainfall is 22.4 inches.

The existing site drains through a storm pipe network discharging directly to the San Francisco Bay and Crissy Marsh. The National Park Service has advised that it would not be acceptable to discharge roadway drainage from the Parkway alignment to Crissy Marsh, since it is an Environmentally Sensitive Area (ESA). Proposed outfalls will discharge directly into the San Francisco Bay.

The overall drainage system within Presidio property is divided into separate stormwater and sanitary pipe networks. The sanitary network, in proximity to the Parkway, is metered to the City of San Francisco combined sewer system, and is ultimately treated at the Southeast Water Pollution Control Plant. Conversely, the stormwater network discharges to the San Francisco Bay. During high flow events, sanitary sewer flows from the Presidio, commingled with combined sewer



from the City, enter the North Shore Outfall Consolidation storage basin. Presently, stormwater flows from Doyle Drive are not treated.

The existing stormwater outfalls servicing the Presidio, in proximity to Doyle Drive, are designed to convey the 10-year storm event (Q_{10}); these are located at the eastern and western sides of the Parkway. The Parkway stormwater conveyance must coincide with the Caltrans Highway Design Manual (HDM), which requires outfall capacity to be designed for the 25-year flow (Q_{25}). Whereas this exceeds the existing capacity, the two functioning outfalls shall be replaced, although not under this contract.

According to the National Resources Conservation Service, the predominant Hydrologic Soil Group (HSG) within the limits of Contract 4 are rated "D." A HSG rating of "D" indicates that the surface, shallow depth, soils are high in clay content, and are impermeable. A map showing these areas is attached; see "Supplemental Attachments."

The general land use is for Presidio National Park purposes. Many of the neighboring structures to the Parkway are low-level buildings of varying historical significance.

2.4 Site Constraints

Construction is not allowed within the Quartermaster Site Area due to archaeological constraints. This constraint eliminates the opportunity to create new storm drain alignments that cross this area. This negatively affects the ability to discharge roadway drainage to potential BMP locations immediately west of the dump site.

Discharge of surface runoff, via infiltration, to the shallow Marina groundwater aquifer is being considered as a design option associated with the BMPs. The Design Team's current understanding of the site constraints are that neither the Statewide Caltrans NPDES permit, nor the completed EIR for the Doyle Drive project eliminate the possibility of discharging to the Marina aquifer. This aquifer is not currently used, nor are there known plans for future use, as a water supply within the vicinity of the project. There are no drinking water reservoirs or recharge facilities within the project boundaries.

Infiltration at natural rates of treated stormwater to the groundwater aquifer would not cause significant detrimental impacts to either the environment or to human health. Allowing for infiltration in BMPs could provide a significant benefit by maintaining natural infiltration rates. Intentionally accelerated infiltration, such as would occur in a well-maintained infiltration basin, could cause unanticipated changes in groundwater flow and elevations, and is not recommended. The consequential infiltration to groundwater that occurs from implementation of stormwater BMPs is being considered as permissible, except where it could potentially have an adverse affect on the groundwater regime.

No right of way costs due to BMP applications is expected.

2.5 Conclusions

To reduce potential stormwater impacts, permanent treatment BMPs and temporary construction BMPs will be implemented. BMPs will treat all roadway runoff from the project in the Water Quality Event (WQE) before discharge into the Bay. The primary BMP device used will be biofiltration swales. The following Sections 4, 5, 6, and 7 further detail these BMPs.

3. Regional Water Quality Control Board Agreements

Caltrans met with representatives of Region 2 on March 24, 2009 to present the Parkway scope and purpose, the accelerated schedule, and permanent stormwater treatment strategy. During this



presentation, Region 2 voiced concerns of Treatment BMP (T-BMP) type-selection; Region 2 prefers incorporation of solely vegetated systems.

The 401 certification, dated June 3, 2009, was issued for the Parkway, not just Contract 4, and included milestones for deliverables, to ensure that Caltrans is progressing with the certified commitments.

4. Describe Proposed Design Pollution Prevention BMPs to be used on the Project.

Design Pollution Prevention BMPs are permanent features incorporated as part of project design to provide source control and slope stabilization, thus minimizing overall erosion potential. Design Pollution Prevention BMPs shall be incorporated pursuant with the Erosion Control requirements detailed in the contract plans and Special Provisions. Please see "Supplemental Attachments" for the Contract 4 Erosion Control (EC) sheets.

Existing vegetation in the contract area generally consists of weedy species and native grasses. The project has been designed to minimize areas of disturbance to accommodate road improvements and existing vegetation will be retained to MEP. Any disturbed areas shall be re-vegetated with 'Type D' hydsoseed to provide soil stabilization, in the interim, between Contract 4 and the forthcoming landscape contract (Contract 8).

Further, ESAs will be fenced to exclude construction access and activity from potentially damaging areas of biological and/or cultural significance.

5. Describe Proposed Permanent Treatment BMPs to be used on the Project

As stated above in Section 2, the Parkway has an approximate net increased impervious area of 27.3 acres, and, of that, the Contract 4 portion is approximately 3.4 acres. To achieve the total treatment goal, T-BMPs have been explored, both, within and downstream of the Caltrans easement. Regardless of the ultimate locations, all T-BMPs servicing the Parkway, will flow to the eastern and western outfalls.

A number of Treatment BMPs were considered. A critical factor in selecting the preferred BMP is the existence of a TMDL program for copper in the Central San Francisco Bay Basin; copper is a Target Design Constituent (TDC) for the water quality treatment system. The Caltrans Stormwater Quality Handbook clearly identifies three T-BMPs that are preferential when copper is the TDC. These are infiltration devices, wet basins, and biofiltration strips. Region 2 has concerns over T-BMP type selection and has been insistent on biofiltration systems as the preferred choice.

Infiltration devices designed specifically to enhance infiltration rates are not considered feasible at the project site. Wet basins are similarly not feasible at the majority of potential BMP locations due to the lack of a permanent water source and long-term maintenance concerns by Caltrans. Finally, biofiltration strips are only feasible in one location, along the western edge of the Parkway alignment, within a landscaped median area (see BMP 2 in the Appendix.)).

Because none of the suggested T-BMPs for copper removal were broadly applicable, biofiltration swales were identified as the BMP which most closely mimics the types of removal processes (infiltration and biofiltration) that occur in both infiltration devices and vegetated filter strips.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2

Stormwater from the Contract 4-6 sites are treated using a set of vegetated swales designated BMP A1, located in the eastern part of the site. The design flow for the swales were based on criteria the WQE treatment. WQE flow rates were based on a rainfall intensity of 0.2 in/hr for water quality flow in Region 2, as found in the Caltrans Storm Water Quality Handbook Section 2.4.2.2. This BMP treats 100% of the runoff from the WQE, but the drainage area for is very large so it



requires multiple vegetated swales in parallel. The swales have been grouped in a configuration of 4, 5, and 4 to allow for access by maintenance staff.

Stormwater reaches the biofiltration swales through a pipe that drains the roadway. This pipe has a flow-splitter, which allows only the WQE flow rate to enter into the BMP. The remaining flow bypasses the BMP and is routed directly to the outfall. Therefore, the design storm flow is not relevant for the sizing of the BMP and will not be further discussed in this report.

The design parameters are as follows:

Impermeable Roadway Area Draining to BMP (C=0.9)	551,400 sf
Permeable Open Space Area Draining to BMP (C=0.25)	44,155 sf
Total Watershed Area	595,600 sf
Weighted Runoff Coefficient	0.85
Total Design Flow	2.4 cfs
Number of Swales	13
Design Flow per Swale	0.18 cfs
Swale Width	8 ft
Swale Length	35 ft
Side Slopes	4:1
Flow Depth	5"
Freeboard	3"
Linear Slope	2%
Infiltration Flow	0.01 cfs
Design Flow	0.17 cfs
Flow Capacity per Manning's Equation	0.18 cfs
Flow Residence Time	13 min

More information regarding BMP A1 and all the BMP's proposed for the site can be found in the June 2009 Draft Stormwater BMP Report, within the Appendix.

As stated above, 27.3 acres is the overall permanent stormwater treatment goal. Caltrans has committed to Region 2, that 100% of the 27.3 acres will be treated, and that the necessary T-BMPs will be functioning by completion of the final roadway contract (Contract 7). Contract 7 is the northbound side of the High Viaduct (Contract 3). Although T-BMP locations have been identified for the drainage systems servicing Contracts 3 and 7, none will be constructed under Contract 4.

6. Describe Proposed Temporary Construction Site BMPs to be used on Project

Whereas the scope of work includes a disturbed soil area of approximately 10.5 acres, a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP shall be prepared by the Contractor, submitted to Caltrans and accepted by the Office of Construction, prior to commencement of construction activities.



To comply with the Statewide NPDES Permit (see Section I), temporary Construction Site BMPs shall be properly implemented to minimize, or prevent, any impacts to downstream existing water quality due to construction operations. Construction of Contract 4 is anticipated to be active throughout three (3) rainy seasons; the rainy season is defined as October 15th through April 15th.

The temporary Construction Site BMP strategy for this project shall consist of the following:

- Stabilized construction entrances will be placed at defined points of entrance/exit from existing roadways to construction areas, in order to reduce the tracking of debris to local Presidio roads,
- Temporary drainage inlet protection will be implemented to reduce soil/sediment, debris, and construction materials from entering the storm drain system,
- Street sweeping practices will be utilized to remove sediments tracked from the construction site onto roads and paved areas, as a means to prevent the sediment and debris from entering the storm drain system,
- Temporary silt fence will be used as a linear sediment barrier, placed at the toe of disturbed slopes to intercept and slow the flow of stormwater run-off,
- Temporally gravel bag berm will be used as a linear sediment barrier where silt fencing is impractical,
- Temporary check dam will be included for deployment as a means of sediment control, placed across areas of concentrated flow, slowing runoff and allowing sediment to fall out of suspension,
- Temporary cover will be included for use, in the event disturbed soil areas need to be temporarily protected from wind or rain,
- Concrete washout (portable) will be included to properly manage concrete solid wastes and slurries,
- Temporary hydraulic mulch will be applied to disturbed areas requiring temporary protection.
- Temporary Erosion Control (Netting) will be applied for small areas that have high erosion potential, such as bridge abutments.
- Temporary Erosion Control (Blanket) will be used when disturbed soils may be difficult to stabilize, eg. in steep slopes, stockpiles, slope near ESAs.
- Temporary Erosion Control (Move in/move out) will be provided for the mobilization of labor, material, and equipments to stabilize soil during each months of the raining season.

Additionally, Construction Site Management is recommended as a lump sum to cover water pollution control applications not discussed above. Applicable temporary Construction Site BMPs are included as past of the contract Water Pollution Control Plans.

7. Maintenance BMPs (Drain Inlet Stenciling)

For any drain inlet which be encountered by pedestrians and/or cyclists, drain inlet stenciling shall be required.



REQUIRED ATTACHMENTS

- ⇒ Vicinity Map
- ⇒ Evaluation Documentation Form
- ⇒ Construction Site BMP Consideration Form

SUPPLEMENTAL ATTACHMENTS

- ⇒ Erosion Control Plans (100% PS&E)
- ⇒ Drainage Plans (100% PS&E)
- ⇒ Draft Stormwater BMP Report (June 2009)
- ⇒ Checklist SW-1, Site Data Sources
- ⇒ Checklist SW-2, Storm Water Quality Issues Summary
- ⇒ Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- ⇒ Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- ⇒ Checklists T-1, Parts 1 and 2 (Treatment BMPs)
- ⇒ Checklists CS-1, Parts 1–6 (Construction Site BMPs)



Evaluation Documentation Form

DATE: 08/25/2009

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs

EA: 163741

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	<input checked="" type="checkbox"/>		Go to 2
2.	Is this an emergency project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes , go to 11. If No , continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , contact the District/Regional NPDES coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 10 or 4 <u>B.J.R.</u> (Dist./Reg. SW Coordinator initials) If No , continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , (<u>San Francisco County</u>), go to 5. If No , go to 11.
5.	Is the project directly or indirectly discharging to surface waters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 6. If No , go to 11.
6.	Is this a new facility or major reconstruction?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 8. If No , go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?	<input type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 8. If No , go to 11.
8.	Does the project result in a <u>net increase of one acre or more of new impervious surface</u> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 10. If No , go to 9. <u>(Net Increase New Impervious Surface)</u>
9.	Is the project part of a Common Plan of Development?	<input type="checkbox"/>	<input type="checkbox"/>	If Yes , continue to 10. If No , go to 11.
10.	Project is required to consider approved Treatment BMPs.	<input checked="" type="checkbox"/>		See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.
11.	Project is not required to consider Treatment BMPs. _____(Dist./Reg. SW Coord. Initials) _____(Project Engineer Initials) _____(Date)	<input type="checkbox"/>		Document for Project Files by completing this form, and attaching it to the SWDR.

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs



Construction Site BMP Consideration Form

DATE: 08/25/2009

Project Evaluation Process for the Consideration of Construction Site BMPs

EA: 163741

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Soil Stabilization (SS) will be required. Complete CS-1, Part 1. Continue to 2. If No , Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the right of way, etc?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Sediment Control (SC) will be required. Complete CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Tracking Control (TC) will be required. Complete CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Wind Erosion Control (WE) will be required. Complete CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; storm water run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes , Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 9.
9.	End of checklist.	<input checked="" type="checkbox"/>		Document for Project Files by completing this form, and attaching it to the SWDR.

PE to initialize after concurrence with Construction (PS&E only)

Date



Checklist SW-1, Site Data Sources

Prepared by: _____ Date: _____ District-Co-Route: _____
 PM (KP): _____ EA: _____
 RWQCB: _____

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• Project Plans/Satellite Imagery/USGS Topographic Map	06/02/09
•	
•	
Hydraulic	
• Water Quality Planning Tool	06/02/09
• Region 2 and SFPUC Websites	06/02/09
•	
Soils	
• NRCS Web Soil Survey	06/02/09
•	
•	
Climatic	
•	
•	
•	
Water Quality	
• Caltrans Storm Water Quality Practice Guidelines	05/03
• NPDES Permit Order No. 99-06-DWQ	07/15/99
• Water Quality Planning Tool	06/02/09
Other Data Categories	
•	
•	
•	
•	
•	
•	



Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Storm Water Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR.

- | | | |
|--|--|--|
| 1. Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation). | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 2. For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 3. Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. Consider appropriate spill contamination and spill prevention control measures for these new areas. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 4. Determine the RWQCB special requirements, including TMDLs, effluent limits, etc. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 5. Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 6. Determine if a 401 certification will be required. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 7. List rainy season dates. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 8. Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 9. If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 10. Determine contaminated or hazardous soils within the project area. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 11. Determine the total disturbed soil area of the project. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 12. Describe the topography of the project site. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 13. List any areas outside of the Caltrans right-of-way that will be included in the project (e.g. contractor's staging yard, work from barges, easements for staging, etc.). | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 14. Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much? | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 15. Determine if a right-of-way certification is required. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 16. Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches. | <input type="checkbox"/> Complete | <input checked="" type="checkbox"/> NA |
| 17. Determine if project area has any slope stabilization concerns. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 18. Describe the local land use within the project area and adjacent areas. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 19. Evaluate the presence of dry weather flow. | <input type="checkbox"/> Complete | <input checked="" type="checkbox"/> NA |





Design Pollution Prevention BMPs Checklist DPP-1, Part 1		
Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Consideration of Design Pollution Prevention BMPs

1. Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]?

- | | | | |
|---|---|--|-----------------------------|
| (a) Will project increase velocity or volume of downstream flow? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| (b) Will the project discharge to unlined channels? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> NA |
| (c) Will project increase potential sediment load of downstream flow? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| (d) Will project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> NA |

If Yes was answered to any of the above questions, consider **Downstream Effects Related to Potentially Increased Flow**, complete the DPP-1, Part 2 checklist.

2. Slope/Surface Protection Systems

- | | | | |
|---|---|-----------------------------|-----------------------------|
| (a) Will project create new slopes or modify existing slopes? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
|---|---|-----------------------------|-----------------------------|

If Yes was answered to the above question, consider **Slope/Surface Protection Systems**, complete the DPP-1, Part 3 checklist.

3. Concentrated Flow Conveyance Systems

- | | | | |
|---|---|-----------------------------|-----------------------------|
| (a) Will the project create or modify ditches, dikes, berms, or swales? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| (b) Will project create new slopes or modify existing slopes? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| (c) Will it be necessary to direct or intercept surface runoff? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |
| (d) Will cross drains be modified? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA |

If Yes was answered to any of the above questions, consider **Concentrated Flow Conveyance Systems**; complete the DPP-1, Part 4 checklist.

4. Preservation of Existing Vegetation

- | | |
|--|--|
| a) It is the goal of the Storm Water Program to maximize the protection of desirable existing vegetation to provide erosion and sediment control benefits on all projects. | <input checked="" type="checkbox"/> Complete |
|--|--|

Consider **Preservation of Existing Vegetation**, complete the DPP-1, Part 5 checklist.



Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Downstream Effects Related to Potentially Increased Flow

1. Review total paved area and reduce to the maximum extent practicable. ☒ Complete
2. Review channel lining materials and design for stream bank erosion control. ☐ Complete
 - (a) See Chapters 860 and 870 of the HDM. ☐ Complete
 - (b) Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity. ☐ Complete
3. Include, where appropriate, energy dissipation devices at culvert outlets. ☐ Complete
4. Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. ☐ Complete
5. Include, if appropriate, peak flow attenuation basins to reduce peak discharges. ☒ Complete



Design Pollution Prevention BMPs

Checklist DPP-1, Part 3

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Slope / Surface Protection Systems

- What are the proposed areas of cut and fill? (attach plan or map) ☐ Complete
- Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows? ☐ Yes ☐ No
- Were slopes rounded and/or shaped to reduce concentrated flow? ☒ Yes ☐ No
- Were concentrated flows collected in stabilized drains or channels? ☒ Yes ☐ No
- Are slopes > 1:4 vertical:horizontal (V:H)? ☒ Yes ☐ No
If Yes, District Landscape Architecture must prepare or approve an erosion control plan.
- Are slopes > 1:2 (V:H)? ☐ Yes ☒ No
If Yes, Geotechnical Services must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Storm Water Coordinator for slopes steeper than 1:2 (V:H).
- Estimate the change to the impervious areas that will result from this project. The total amount of impervious acreage for Contract 4 of the Doyle Drive Project is 10.5 acres. ☒ Complete

VEGETATED SURFACES

- Identify existing vegetation. ☒ Complete
- Evaluate site to determine soil types, appropriate vegetation and planting strategies. ☒ Complete
- How long will it take for permanent vegetation to establish? ☐ Complete
- Minimize overland and concentrated flow depths and velocities. ☒ Complete

HARD SURFACES

- Are hard surfaces required? ☐ Yes ☒ No
If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations. ☐ Complete

Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems. ☐ Complete



Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Chapters 813, 836, and 860 of the HDM. ☒ Complete
2. Evaluate risks due to erosion, overtopping, flow backups or washout. ☐ Complete
3. Consider outlet protection where localized scour is anticipated. ☐ Complete
4. Examine the site for run-on from off-site sources. ☐ Complete
5. Consider channel lining when velocities exceed scour velocity for soil. ☐ Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. ☐ Complete
2. Consider paved spillways for side slopes flatter than 1:4 V:H. ☐ Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. ☐ Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. ☐ Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. ☒ Complete



Design Pollution Prevention BMPs

Checklist DPP-1, Part 5

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Preservation of Existing Vegetation

1. Review Preservation of Property, Standard Specifications 16.1.01 and 16-1.02 (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation. ☒ Complete
2. Has all vegetation to be retained been coordinated with Environmental, and identified and defined in the contract plans? ☒ Yes ☐ No
3. Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling? ☒ Complete
4. Have impacts to preserved vegetation been considered while work is occurring in disturbed areas? ☒ Yes ☐ No
5. Are all areas to be preserved delineated on the plans? ☒ Yes ☐ No



Treatment BMPs		
Checklist T-1, Part 1		
Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watersheds within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed.

1. Dry Weather Flow Diversion

- (a) Are dry weather flows generated by Caltrans anticipated to be persistent? ☐ Yes ☒ No
- (b) Is a sanitary sewer located on or near the site? ☐ Yes ☐ No
- (c) Is the connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices? ☐ Yes ☐ No
- (d) Is the domestic wastewater treatment authority willing to accept flow? ☐ Yes ☐ No

If Yes was answered to all of these questions consider Dry Weather Flow Diversion, complete and attach Part 3 of this checklist

- 2. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash?** ☐ Yes ☒ No

If Yes, consider Gross Solids Removal Devices (GSRDs), complete and attach Part 6 of this checklist. Note: Biofiltration Systems, Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter – consult with District/Regional NPDES if these devices should be considered to meet litter/trash TMDL.

- 3. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year?** ☐ Yes ☒ No
 If Yes, consider **Traction Sand Traps**, complete and attach **Part 7** of this checklist.
- 4. (a) Are there local influent limits for infiltration or Basin Plan restrictions or other local agency prohibitions that would restrict the use of the infiltration devices?** ☒ Yes ☐ No



(b) Would infiltration pose a threat to local groundwater quality as determined by the District/Regional Storm Water Coordinator?

☐ Yes ☒ No

If the answer to either part of Question 4 is Yes, then Infiltration Devices are infeasible and the consideration of Infiltration Devices should not be made when completing Questions 5 through 17.

5. (a) Does the project discharge to any 303(d) listed water body?
If No, go to Question 17, General Purpose Pollutant Removal

☒ Yes ☐ No

(b) If Yes, is the identified pollutant(s) considered a Targeted Design Constituent (TDC) (check all that apply):

___phosphorus, ___nitrogen, ___total copper, ___dissolved copper,
___total lead ___dissolved lead, ___total zinc, ___dissolved zinc,
___sediments, ___general metals [unspecified metals].

(c) If only one TDC is checked above, continue to Question 6.

☒ Complete

(d) If more than one TDC is checked, contact your District/Regional NPDES Coordinator to determine priority before continuing with this checklist.

☐ Complete

6. Consult with the District/Regional Storm Water Coordinator to determine whether Treatment BMP selection will be affected by any existing or future TMDL requirements.

☒ Complete

The following questions show the approved Treatment BMPs in order of preference based on load reduction (performance) for the listed constituent and lifetime costs for the device, excluding right-of-way. Note that a line separates Treatment BMPs into groups of approximately equal effectiveness and within each grouping, any of the Treatment BMPs may be selected for placement if meeting site conditions. In the space provided next to the BMP, use Yes or a check mark to indicate a positive response.

If none of the listed Treatment BMPs for a specific constituent of concern (TDC) can be sited, go to Step #17 (General Purpose Pollutant Removal) to determine whether another Treatment BMP can be incorporated into the project.

For the SWDRs developed for the PID and PA/ED phases of a project: Consider all approved Treatment BMPs listed that can be reasonably incorporated into the project for each TDC.

For the SWDR developed for the PS&E phase: Indicate (Yes or check mark) only those BMPs that will be incorporated into the project.

7. Is phosphorus the TDC? [Use this constituent if "eutrophic" or "nutrients" is the TDC for the water body.] If Yes, consider:

☐ Yes ☒ No

___ Infiltration Devices
___ Austin Sand Filters



8. Is nitrogen the TDC? If Yes, consider:

☐ Yes ☒ No

☐ Infiltration Devices
☐ Austin Sand Filters
☐ Delaware Filter
☐ Detention Device
☐ MCTT

9. Is copper (total) the TDC? If Yes for total Copper, consider:

☒ Yes ☐ No

☐ Infiltration Devices
☐ Wet Basins
☐ Biofiltration Strips
☐ Detention Device
☒ Biofiltration Swales
☐ Austin Sand Filter
☐ Delaware Filter
☐ MCTT

10. Is copper (dissolved) the TDC? If Yes for dissolved Copper, consider:

☒ Yes ☐ No

☐ Infiltration Devices
☐ Biofiltration Strips
☐ Wet Basin
☒ Biofiltration Swale

11. Is lead (total) the TDC? If Yes for total Lead, consider:

☐ Yes ☒ No

☐ Infiltration Devices
☐ Wet Basin
☐ Biofiltration Strips
☐ Austin Sand Filter
☐ **Delaware Filter**
☐ Detention Device
☐ Biofiltration Swales
☐ MCTT

12. Is lead (dissolved) the TDC? If Yes for dissolved Lead, consider:

☐ Yes ☒ No

☐ Infiltration Devices
☐ Biofiltration Strips
☐ Wet Basin
☐ Detention Device
☐ Biofiltration Swales
☐ Austin Sand Filter

13. Is zinc (total) the TDC? If Yes for total Zinc, consider:

☐ Yes ☒ No

☐ Infiltration Devices
☐ Delaware Filter
☐ Wet Basin
☐ Biofiltration Strips
☐ Biofiltration Swales
☐ Austin Sand Filter
☐ MCTT
☐ Detention Devices



14. Is zinc (dissolved) the TDC? If Yes for dissolved Zinc, consider: ☐ Yes ☒ No

☐ Infiltration Devices
☐ Delaware Filter
☐ Biofiltration Strip
☐ Biofiltration Swale
☐ Austin Sand Filter
☐ MCTT

15. Is sediment (total suspended solids [TSS]) the TDC? If Yes for TSS, consider: ☒ Yes ☐ No

☐ Infiltration Devices
☐ Austin Sand Filter
☐ Delaware Filter
☐ Wet Basin
☐ Detention Device
☐ Biofiltration Strip
☐ MCTT
☒ Biofiltration Swale

16. Are "General Metals" or (unspecified) "Metals" the TDC? If Yes for General Metals, consider: ☒ Yes ☐ No

☐ Infiltration Devices
☐ Biofiltration Strips
☐ Wet Basin
☒ Biofiltration Swale
☐ Austin Sand Filter
☐ Delaware Filter
☐ MCTT

17. General Purpose Pollutant Removal.: When it is determined that there are no TDCs, consider the Treatment BMPs in the order listed below. ☐ Yes ☒ No

☐ Infiltration Devices
☐ Biofiltration Strips
☐ Wet Basin
☐ Biofiltration Swale
☐ Austin Sand Filter
☐ Detention Device
☐ Delaware Filter
☐ MCTT

18. Biofiltration ☒ Yes ☐ No
(a) Are site conditions and climate favorable to allow suitable vegetation to be established?

- (b) Have Biofiltration strips and swales been considered to the extent practicable? Note: Biofiltration BMPs should be considered for all projects, even if other Treatment BMPs are placed. ☒ Yes ☐ No

If No to (a) or (b), document justification in Section 5 of the SWDR.



19. After completing the above, complete and attach the checklists shown below for every Treatment BMP under consideration ☒ Complete

☒ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
☐ Dry Weather Diversion: Checklist T-1, Part 3
☐ Infiltration Devices: Checklist T-1, Part 4
☐ Detention Devices: Checklist T-1, Part 5
☐ GSRDs: Checklist T-1, Part 6
☐ Traction Sand Traps: Checklist T-1, Part 7
☐ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
☐ Multi-Chambered Treatment Train: Checklist T-1, Part 9
☐ Wet Basins: Checklist T-1, Part 10

20. (a) Estimate what percentage of WQV/WQF will be treated by the preferred Treatment BMP(s): _____% ☐ Complete

(b) Have Treatment BMPs been considered for use in parallel or series to increase this percentage? ☒ Yes ☐ No

21. Prepare cost estimate, including right-of-way, for selected Treatment BMPs and include as supplemental information for SWDR approval. ☐ Complete



Treatment BMPs Checklist T-1, Part 2		
Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒ Yes ☐ No

2. Are flow velocities < 4 fps (i.e. low enough to prevent scour of the vegetated bioswale as per HDM Table 873.3E)? ☒ Yes ☐ No

- If No to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

3. Are Biofiltration Swales proposed at sites where known hazardous soils or contaminated groundwater plumes exist? ☐ Yes ☒ No
If Yes, consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place biofiltration device(s)? ☒ Yes ☐ No
If Yes, continue to the Design Elements section. If No, continue to Question 5.

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration Devices and how much right-of way would be needed to treat WQF? _____ acres ☐ Yes ☐ No
If Yes, continue to Design Elements section. If No, continue to Question 6.

6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. ☐ Complete

Design Elements

* **Required** Design Element – A “Yes” response to these questions is required to further the consideration of this BMP into the project design. Document a “No” response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A “Yes” response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☒ Yes ☐ No



2. Can the bioswale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.) ☒ Yes ☐ No
3. Can the bioswale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)* ☒ Yes ☐ No
4. Is the maximum length of a biostrip ≤ 300 ft? * ☐ Yes ☐ No
5. Has the minimum width (in the direction of flow) of the invert of the bioswale received the concurrence of Maintenance? * ☐ Yes ☐ No
6. Can bioswales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? ** ☒ Yes ☐ No
7. Is the biostrip sized as long as possible in the direction of flow? ** ☐ Yes ☐ No
8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? ** ☐ Yes ☒ No





Construction Site BMPs Checklist CS-1, Part 1

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between beginning and end of construction? _____ 2 _____

2. What is the total disturbed soil area for the project? The total impervious acreage for the project is 6.8 (ac) _____ 6.8 _____
 - (a) How much of the project DSA consists of slopes 1V:4H or flatter? (ac) _____
 - (b) How much of the project DSA consists of 1V:4H < slopes < 1V:2H? (ac) _____
 - (c) How much of the project DSA consists of slopes 1V:2H and steeper? (ac) _____
 - (d) How much of the project DSA consists of slopes with slope lengths longer than 20 ft? (ac) _____

3. What rainfall area does the project lie within? (Refer to Table 2-1 of the Construction Site Best Management Practices Manual) _____ Northern and Central _____

4. Review the required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. (Refer to Tables 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) ☒ Complete

Scheduling (SS-1)

5. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres? ☐ Yes ☒ No
 - (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) ☐ Complete
 - (b) Edit Order of Work specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. ☐ Complete



- (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. ☐ Complete

Preservation of Existing Vegetation (SS-2)

6. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the project limits? (Verify the completion of DPP-1, Part 5) ☒ Yes ☐ No
- (a) Verify the protection of ESAs through delineation on all project plans. ☒ Complete
- (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. ☒ Complete
7. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent practicable.) ☒ Yes ☐ No
- (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. ☒ Complete
- (b) Protect with high visibility plastic fence or other BMP. ☒ Complete
8. If yes for 6, 7, or both, then designate ESA fencing as a separate contract bid line item, *if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5).* ☒ Complete

Slope Protection

9. Provide a soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District/Regional Landscape Architect.)
- (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-6 (Straw Mulch), SS-7 (Geotextiles, RECPs, etc.), SS-8 (Wood Mulching), other BMPs or a combination to cover the DSA throughout the project's rainy season. ☒ Complete
- (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☐ Complete
- (c) Designate as a separate contract bid line item. ☒ Complete



Slope Interrupter Devices

10. Provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 20 ft in length. (Consult with District/Regional Landscape Architect and Designated Construction Representative.)
- (a) Select SC-5 (Fiber Rolls) or other BMPs to protect slopes throughout the project's rainy season. ☒ Complete
 - (b) For slope inclination of 1V:4H and flatter, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 20 ft on center. ☐ Complete
 - (c) For slope inclination between 1V:4H and 1V:2H, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 15 ft on center. ☐ Complete
 - (d) For slope inclination of 1V:2H and greater, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 10 ft on center. ☐ Complete
 - (e) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) ☐ Complete
 - (f) Designate as a separate contract bid line item. ☒ Complete

Channelized Flow

11. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the right-of-way (off-site run-on). ☐ Complete
- (a) Utilize SS-7 (Geotextiles, RECPs, etc.), SS-9 (Earth Dikes/Swales, Ditches), SS-10 (Outlet Protection/Velocity Dissipation), SS-11 (Slope Drains), SC-4 (Check Dams), or other BMPs to convey concentrated flows in a non-erosive manner. ☒ Complete
 - (b) Designate as a separate contract bid line item. ☒ Complete



Construction Site BMPs Checklist CS-1, Part 2

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? ☒ Yes ☐ No
 - (a) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) ☒ Complete
 - (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☐ Complete
 - (c) Designate as a separate contract bid line item. ☒ Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? ☒ Yes ☐ No
 - (a) Utilize linear sediment barriers such as SS-9 (Earth Dike/Drainage Swales and Lined Ditches), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) ☒ Complete
 - (b) Designate as a separate contract bid line item. ☒ Complete



Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the project limits? ☒ Yes ☐ No
- (a) Select SC-10 (Storm Drain Inlet Protection) to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) ☒ Complete
- (b) Designate as a separate contract bid line item. ☒ Complete
4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in SC-10 (Storm Drain Inlet Protection- Type 2)? ☐ Yes ☐ No
- (a) Include with other types of SC-10 (Storm Drain Inlet Protection). ☐ Complete

Sediment/Desilting Basin (SC-2)

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? (Refer to Tables 2-1, 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) ☐ Yes ☒ No
- (a) Consider feasibility for desilting basin allowing for available right-of-way within the project limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. ☐ Complete
- (b) If feasible, design desilting basin(s) per the guidance in SC-2 Sediment/Desilting Basins of the Construction Site BMP Manual to maximize capture of sediment-laden runoff. ☐ Complete
- Designate as a separate contract bid item. ☐ Complete
6. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) ☐ Yes ☐ No
- (a) Edit Order of Work specifications for permanent treatment BMP work to be implemented in a manner that will allow its use as a construction site BMP. ☐ Complete

Sediment Trap (SC-3)

7. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge? ☐ Yes ☐ No
- (a) Design sediment traps in accordance with the Construction Site BMP Manual. ☐ Complete
- (b) Designate as a separate contract bid line item. ☐ Complete



Construction Site BMPs
Checklist CS-1, Part 3

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Tracking Controls

Stabilized Construction Entrance/Exit (TC-1)

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) ☒ Yes ☐ No
- (a) Identify and designate these entrance/exit points as stabilized construction entrances (TC-1). ☒ Complete
- (b) Designate as a separate contract bid line item. ☒ Complete

Tire/Wheel Wash (TC-3)

1. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) ☐ Yes ☐ No
- Designate as a separate contract bid line item. ☐ Complete

Stabilized Construction Roadway (TC-2)

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) ☒ Yes ☐ No
- (a) Designate these temporary access roads as stabilized construction roadways (TC-2). ☒ Complete
- (b) Designate as a separate contract bid line item. ☒ Complete

Street Sweeping and Vacuuming (SC-7)

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) ☒ Yes ☐ No
- Designate as a separate contract bid line item. ☒ Complete



Construction Site BMPs
Checklist CS-1, Part 4

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Wind Erosion Controls

Wind Erosion Control (WE-1)

1. Is the project located in an area where standard dust control practices in accordance with Standard Specifications, Section 10: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind?
(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.) ☒ Yes ☐ No
 - (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats), SS-8 (Wood Mulching) or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) ☒ Complete
 - (b) Designate as a separate contract bid line item. ☒ Complete



Construction Site BMPs Checklist CS-1, Part 5

Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Non-Storm Water Management

Temporary Stream Crossing (NS-4) & Clear Water Diversion (NS-5)

1. Will construction activities occur within a waterbody or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) ☐ Yes ☒ No
 - (a) Select from types offered in NS-4 (Temporary Stream Crossing) to provide access through watercourses consistent with permits and agreements.¹ ☐ Complete
 - (b) Select from types offered in NS-5 (Clear Water Diversion) to divert watercourse consistent with permits and agreements.¹ ☐ Complete
 - (c) Designate as a separate contract bid line item(s). ☐ Complete

Other Non-Storm Water Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒ Yes ☐ No
 - (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as NS-1 (Water Conservation Practices), NS-2 (Dewatering Operations), NS-3 (Paving and Grinding Operations), NS-7 (Potable Water/Irrigation), NS-8 (Vehicle and Equipment Cleaning), NS-9 (Vehicle and Equipment Fueling), NS-10 (Vehicle and Equipment Maintenance), NS-11 (Pile Driving Operations), NS-12 (Concrete Curing), NS-13 (Material and Equipment Use Over Water), NS-14 (Concrete Finishing), and NS-15 (Structure Demolition/Removal Over or Adjacent to Water).¹ ☒ Complete
 - (b) Verify that costs for non-storm water management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☐ Complete

¹ Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 permit and Dept. of Fish and Game 1601 Streambed alteration Agreements.



Construction Site BMPs Checklist CS-1, Part 6		
Prepared by: _____	Date: _____	District-Co-Route: _____
PM (KP): _____	EA: _____	
RWQCB: _____		

Waste Management & Materials Pollution Control

Concrete Waste Management (WM-8)

1. Does the project include concrete pours or mortar mixing? ☒ Yes ☐ No
 - (a) Select from types offered in WM-8 (Concrete Waste Management) to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.) ☒ Complete
 - (b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd³ or if requested by Construction. ☒ Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒ Yes ☐ No
 - (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as WM-1 (Material Delivery and Storage), WM-2 (Material Use), WM-4 (Spill Prevention and Control), WM-5 (Solid Waste Management), WM-6 (Hazardous Waste Management), WM-7 (Contaminated Soil Management), WM-9 (Sanitary/Septic Waste Management) and WM-10 (Liquid Waste Management) ☒ Complete
 - (b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☒ Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction? ☒ Yes ☐ No
 - (a) Select WM-3 (Stockpile Management), SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, RECPs etc.), or a combination as appropriate to cover temporary stockpiles of soil, etc. ☒ Complete
 - (b) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to encircle temporary stockpiles of soil, etc. (Coordinate with District Construction for selection and preference of BMPs related to stockpiles.) ☒ Complete



- (c) Designate as a separate contract bid line item if the requirements in Construction Site management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☒ Complete
4. Is there a potential for dust and debris from construction material (fill material, etc.) and waste (concrete, contaminated soil, etc.) stockpiles to be transported offsite by wind? ☒ Yes ☐ No
- (a) Select SS-7, temporary cover, plastic sheeting or other BMP to cover stockpiles subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) ☒ Complete
- (b) Designate as a separate contract bid line item. ☒ Complete

